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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,632	02/21/2002	Slemen Roelof Van Der Heide	30394-1057	7250
5179	7590	05/02/2005	EXAMINER	
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ALBUQUERQUE, NM 871256927			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 05/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	09/936,632	HEIDE ET AL.
Examiner	Art Unit	
André K. Jackson	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

1)  Responsive to communication(s) filed on 25 February 2005.

2a)  This action is **FINAL**.                    2b)  This action is non-final.

3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

4)  Claim(s) 7-14,17-24 and 26-28 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5)  Claim(s) \_\_\_\_\_ is/are allowed.

6)  Claim(s) 7-14,17-22,24 and 26-28 is/are rejected.

7)  Claim(s) 23 is/are objected to.

8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

9)  The specification is objected to by the Examiner.

10)  The drawing(s) filed on \_\_\_\_\_ is/are: a)  accepted or b)  objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some \* c)  None of:  
1.  Certified copies of the priority documents have been received.  
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)  Notice of References Cited (PTO-892)  
2)  Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3)  Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4)  Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5)  Notice of Informal Patent Application (PTO-152)  
6)  Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 7-14,17-20,22,24 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moreau et al. in view of Zollingger et al. and in further view of Marvin et al.

Regarding claim 7, Moreau et al. disclose in the patent entitled "Multi-element ultrasonic probe for electronic scanning" a measuring head (4) and a reel (15). Zollingger et al. disclose in the patent entitled "Apparatus for inspecting piping" a cable (60), a measuring head (driver coil 28), a reel (spool 38) and where the measuring head (driver coil 28) and reel (spool 38) are each individually incorporated in carrier members (body modules 26) moveable through the pipes or tubes and which members are sequentially interconnected with flexible couplings (connection seals 51) shown in Figures 1,4. Moreau et al. do not disclose where the members are sequentially interconnected with flexible couplings having a smaller diameter than the diameter of the carrier member.

However, Zollingger et al. disclose this feature in Figures 1,4. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Moreau et al. to include where the members are sequentially interconnected with flexible couplings having a smaller

diameter than the diameter of the carrier member. By adding this feature the apparatus would be able to keep each component separate and free from possible interference such as the spool becoming dislodge and striking the measuring head if the components were placed in the same compartment. Moreau et al. disclose where the apparatus can negotiate small bends within the pipes or tubes (Column 3, lines 40-45; Column 6, lines 33-45). Moreau et al. do not disclose a 1D bend in the pipe. However, Marvin et al. disclose in the patent entitled "Furnace tube inspection apparatus" where an inspection apparatus can pass through 1D bends within the pipes or tubes (Column 1, lines 19-35; Column 4, lines 30-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Moreau et al. to include where an inspection apparatus can pass through 1D bends within the pipes or tubes. By adding this feature the apparatus would be able to inspect conduits such as a furnace with tight bends.

Regarding claim 8, Moreau et al. disclose where the cable reel includes an axis of rotation substantially parallel to a direction of travel of the apparatus (Figure 1).

Regarding claim 9, Moreau et al. disclose a reel (15) for winding the cable on and off.

Regarding claim 10, Moreau et al. disclose a cable (11) that includes a data communications cable.

Regarding claim 11, Moreau et al. do not disclose a cable that is a glass fiber and a feed device for feeding the measuring head. However, Murakami et al. disclose a cable that is a glass fiber (108) and a feed device for feeding the measuring head (106). Therefore, it would have been obvious to modify Moreau et al. to include a cable that is a glass fiber and a feed device for feeding the measuring head since using optical fiber makes the apparatus lighter and the feed device is needed to provide energy to the measuring head.

Regarding claim 12, Moreau et al. do not disclose where the cable has a thickness of less than approximately 0.125 mm. However, it is considered a design choice and well within the purview of the skilled artisan to provide where the cable has a thickness of less than approximately 0.125 mm since this would allow the cable to travel around the bends within the pipe and not interfere with the movement of the apparatus.

Regarding claim 13, Moreau et al. do not disclose where the cable has a length of up to approximately 3 km. However, it is considered a design choice and well within the purview of the skilled artisan to have the cable with a length of up to approximately 3 km depending on the length of the apparatus to be inspected.

Regarding claim 14, Moreau et al. disclose where the cable (11) supplies power to the apparatus.

Regarding claim 17, Moreau et al. do not disclose where at least one carrier member has a power supply. However, Zollingger et al. disclose where the at least one carrier member has a power supply (Abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Moreau et al. to include where at least one carrier member has a power supply. By adding this feature the apparatus would be able to inspect the pipes without relying on a wire to deliver power to the device from outside of the pipe.

Regarding claim 18, Moreau et al. do not disclose where the power supply has one or more batteries. However, Zollingger et al. disclose where the power supply has one or more batteries (Abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Moreau et al. to include where the power supply has one or more batteries. By adding this feature the apparatus would be able to inspect the pipes without relying on a wire to deliver power to the device from outside of the pipe.

Regarding claim 19, both Moreau et al. and Zollingger et al. disclose where electronics are incorporated individually in carrier members (Figure 10) and (Figure 1, Column 3, lines 34-48) respectively.

Regarding claim 20, Moreau et al. disclose where the electronics has an electronic control unit (86).

Regarding claim 22, Moreau et al. do not disclose where each of the coupling tubes is approximately 10 cm long. However, it is considered a design choice and well within the purview of the skilled artisan to have where each of the coupling tubes is approximately 10 cm long depending on the length of the apparatus to be inspected.

Regarding claim 24, Moreau et al. do not disclose where the at least one steel covering includes woven steel. However, it is considered a design choice and well within the purview of the skilled artisan to have where the at least one steel covering includes woven steel since this modification would allow the apparatus to have appropriate protection when moving through the pipes or tubes.

Regarding claim 26, Moreau et al. do not explicitly disclose where the length of the tubes are chosen because of its flexural stiffness. However, it is well within the purview of the skilled artisan to provide where the length of the tubes are chosen because of its flexural stiffness in order to proceed through the pipes without getting stuck and the ability to move through the pipes with ease.

Regarding claim 27, Moreau et al. do not disclose where the coupling tubes are sufficiently bendable to allow passage of the apparatus through one or more 1D bends in the pipe or tube. However, Marvin et al. disclose where the coupling tubes are sufficiently bendable to allow passage of the apparatus through one or more 1D bends in the pipe or

tube (Column 4, lines 29-40). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Moreau et al. to include where the coupling tubes are sufficiently bendable to allow passage of said apparatus through one or more 1D bends in the pipe or tube. By adding this feature the apparatus would not become stuck or hindered by the severe bends within the furnace.

Regarding claim 28, Moreau et al. do not disclose where the 1D bends includes 180-degree 1D bends. However, Marvin et al. disclose where the 1D bends includes 180-degree 1D bends (Column 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Moreau et al. to include where the 1D bends includes 180 degree 1D bends since most tubes line the inside wall of the firebox in this manner.

3. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moreau et al. in view of Zollingger et al. and Marvin et al. and further in view of Wernicke.

Regarding claim 21, neither Moreau et al., Zollingger et al. nor Marvin et al. disclose where the flexible couplings include hydraulic tubes. However, Wernicke discloses in the patent entitled "Spiral tractor apparatus and method" flexible couplings include hydraulic tubes. Therefore, it would have been obvious to one of ordinary skill in the art to modify Moreau et al. to include flexible couplings include hydraulic tubes

since would provide the apparatus with a durable structure for the couplings.

4. Claim 23 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Response to Arguments***

5. Applicant's arguments filed 02/25/05 have been fully considered but they are not persuasive. Applicant has argued that Moreau et al. do not disclose a separate ultrasonic measuring head, separate carrier members and a separate cable reel. The measuring head (4) and reel (15) of Moreau et al. and cable (60), measuring head (28), reel (spool 38) of Zollingger et al. are not together and are in separate places and within different modules (Figure 1) and (modules 26) respectively. The claim calls for "a separate ultrasonic measuring head sufficiently small to pass through one or more ID bends in the pipe or tube; at least one separate carrier member sufficiently small to pass through one or more ID bends in the pipe or tube; a separate cable reel sufficiently small to pass through one or more ID bends in the pipe or tube". There is nothing in the claim which states these cannot be housed under a polyurethane seal with separate compartments (26) under the seal to house the different components. The claim is being interpreted as those elements being

separate from one another in different compartments. Moreau et al. teach where (4) and (15) are separate (see Figure 1). Zollingger et al. show a reel (spool 38), which is separate from measuring head (28). In fact Applicant's drawing shows how these compartments are connected through a coupling (7). So, as argued by the Applicant the instant invention would not have separate components since (7) connects all of the compartments. Zollingger et al. disclose in Figure 4 a rubber tubing (74) that connects two modules together where the tube couplers (rubber tubing 74) are of a smaller diameter than the modules (26).

Applicant has argued that communication wire (6) does not have sufficient tensile rigidity to propel the apparatus of Zollingger et al. The claim calls for "a separate cable reel". There is nothing in the claim, which suggests that the cable is used for propelling the apparatus.

Applicant has argued that Moreau et al. teaches away from a combination with Zollingger et al. Applicant states "the large number of return bends in a section of tubes makes the use of inspection tools with a connecting cable or tether impossible beyond a certain number of bends". The Examiner agrees with this statement. However, the claim calls for "one or more 1D bends" since the claim is in the alternative and Marvin et al. state that more bends would be impossible to negotiate, it is safe to say that it would be possible for the apparatus to negotiate at least one 1D bend as claimed.

Applicant has argued that Wernicke does not disclose hydraulic tubes that are flexible couplings. However, Wernicke discloses in column 17 that the coupling mechanism 298 may be a bendable coupling.

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to André K. Jackson whose telephone number is (571) 272-2196. The examiner can normally be reached on Mon.-Thurs. 7AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-

2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A.J.

April 28, 2005

  
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